

The AMERICAN PHYSICS TEACHER

BOARD OF EDITORS

DUANE ROLLER, *Editor*

Associate Editors

LEE A. DuBRIDGE
G. P. HARNWELL
A. A. KNOWLTON

C. J. LAPP
K. LARK-HOROVITZ
LOUISE S. McDOWELL

F. K. RICHTMYER
L. W. TAYLOR
DAVID L. WEBSTER

VOLUME 3, NUMBERS 1-4, 1935

Published for the
AMERICAN ASSOCIATION OF PHYSICS TEACHERS
by the
AMERICAN INSTITUTE OF PHYSICS
Incorporated

AMERICAN ASSOCIATION OF PHYSICS TEACHERS

OFFICERS OF THE ASSOCIATION

DAVID L. WEBSTER, *President*
Stanford University
Stanford University, California

F. K. RICHTMYER, *Vice-President*
Cornell University
Ithaca, New York •

WILLIAM S. WEBB, *Secretary*
University of Kentucky
Lexington, Kentucky

PAUL E. KLOPSTEG, *Treasurer*
Central Scientific Company
Chicago, Illinois

EXECUTIVE COMMITTEE

D. W. CORNELIUS
HOMER L. DODGE
PAUL E. KLOPSTEG
HARVEY B. LEMON

FREDERIC PALMER, JR.
F. K. RICHTMYER
F. A. SAUNDERS
K. K. SMITH

L. W. TAYLOR
WILLIAM S. WEBB
DAVID L. WEBSTER
A. G. WORTHING

THE AMERICAN PHYSICS TEACHER

BOARD OF EDITORS

DUANE ROLLER, *Editor*

Associate Editors

LEE A. DUBRIDGE
G. P. HARNWELL
A. A. KNOWLTON

C. J. LAPP
K. LARK-HOROVITZ
LOUISE S. McDOWELL

F. K. RICHTMYER
L. W. TAYLOR
DAVID L. WEBSTER

THE AMERICAN PHYSICS TEACHER is published quarterly in February, May, September, and December by the American Institute of Physics for the American Association of Physics Teachers.

Manuscripts for publication should be submitted to the Editor, *The American Physics Teacher*, University of Oklahoma, Norman, Oklahoma.

Proof and all correspondence concerning papers in the process of publication should be addressed to the Editorial Secretary, American Institute of Physics, 11 East 38th Street, New York, New York.

Subscription price: United States and Possessions and Canada—\$3.00 per year; Foreign—\$3.50 per year.

Subscriptions and orders for back numbers should be addressed to the American Institute of Physics, Prince and Lemon Sts., Lancaster, Pa., or 11 East 38th Street, New York, New York. Members of the American Association of Physics Teachers receive *The American Physics Teacher*.

Advertising is not accepted for *The American Physics Teacher* but attention is called to the *Review of Scientific*

Instruments with Physics News and Views, a companion publication of the Institute, and a medium through which those who are interested in the field of physics can be reached effectively. Advertising rates and other information will be furnished by the Editorial Secretary on request.

Changes of address and complaints of failure to receive *The American Physics Teacher*: Members of the American Association of Physics Teachers should address the Treasurer; other subscribers should address the Editorial Secretary. New copies can be sent free in response to complaints on non-delivery only if notice of non-delivery is received within three months of date of issue.

The contents of *The American Physics Teacher* can be found indexed in the *Education Index*.

Entered as second-class matter February 6, 1935, at the post office at Lancaster, Pa., under the Act of August 24, 1912.

CONTENTS

FEBRUARY, 1935

Elliptic Polarization of Light by Total Reflection	W. W. SLEATOR	1
Undergraduate Project—An Experimental Wind Tunnel	S. R. WILLIAMS	7
Artificial Nuclear Disintegration	G. P. HARNWELL	10
New Physics Building at Washington University	C. F. HAGENOW	25
Apparatus, Demonstrations and Laboratory Methods:		
Experiments with An Electromagnetic Pendulum	J. E. CALTHROP	32
Simple Cathetometer and Appliances	C. J. OVERBECK	34
Almost Forgotten Case of Elastic Impact	HARVEY B. LEMON	36
Laboratory Experiment for Measuring the Speed of a Rifle Bullet	J. H. MCLEOD	37
Brief Notices of Recent Publications		38
Discussion and Correspondence:		
Convenient Projection Electroscopes	HARRY E. HAMMOND	39
Acceleration of or Due to Gravity?	JOHN D. AKERMAN	39
Why the Poundal?	GWILYM E. OWEN	39
On Degenerate Gases	MORTON MASIUS	40
Simple Scheme for Remembering the Relations between Practical, Electromagnetic and Electrostatic Units	M. S. ALLEN	41
Appointments Available in Various Universities and Colleges to Graduate Students Majoring in Physics		42
Proceedings of the American Association of Physics Teachers:		
Minutes of the Pittsburgh Meeting, December 27-29, 1934	THOMAS D. COPE	44
Annual Report of the Treasurer	PAUL E. KLOFSTEG	45
Digest of Periodical Literature		46
Teaching Aids		48

MAY, 1935

Discovery of Difference Tones	ARTHUR TABER JONES	49
Some Common Misconceptions in the Theory of Electricity	LEIGH PAGE AND NORMAN I. ADAMS, JR.	51
Appointments Available to Graduate Students		58
Study Habits in Elementary Physics	WILFRID J. JACKSON	59
Science Teacher's Dilemma	ARTHUR S. ADAMS	61
Substitute for the Carnot Engine in Elementary Texts	WINTHROP R. WRIGHT	63
Physics Museum	E. HUTCHISSON AND V. HICKS	65
Laboratory Course with a Plot	GEORGE B. WELCH	69
Physics Club of Philadelphia	HORACE C. RICHARDS	70
Apparatus, Demonstrations and Laboratory Methods:		
Model Vernier for Projection	JOHN J. HEILEMANN	72
Electrostatic Pendulum	J. A. VAN DEN AKKER	72
Method of Demonstrating the Principles of Interference	CHARLES E. MILLER	75
Three-Phase Motor and Generator Attachment	GREGG M. EVANS	76
Some Dynamic Applications of Liquid Manometers	RICHARD M. SUTTON	77
Electrometer Tube Circuit for Operation from Alternating-Current Mains	G. P. HARNWELL	82
Important Notice to A.A.P.T. Members		84
Discussion and Correspondence:		
A.A.P.T. Book on Demonstrations	RICHARD M. SUTTON	85
Three Catch Questions	E. U. CONDON	85
Simplified Dynamo and Motor Rules	ARTHUR TABER JONES	86
Teaching Kirchhoff's Laws	R. A. SAWYER	86
Is a Current of Electricity Electricity?	HARLEY HOWE	88
Standing Waves by Reflection	W. H. PIELEMEIER	89
Recent Actions of the International Electrotechnical Commission in Reference to Electric and Magnetic Units	A. E. KENNELLY	89
Program for the Physics Section of the S.P.E.E.	G. E. GRANTHAM	90
Reports of Committees of the American Association of Physics Teachers:		
Electric and Magnetic Units and Dimensions	W. H. MICHENER	90
Tests	C. J. LAPP	91
Physics in a Liberal Arts Education	CALVIN N. WARFIELD	91
Brief Notices of Recent Publications		92
Digest of Periodical Literature		94

SEPTEMBER, 1935

Survey Courses in the Natural Sciences	ROBERT J. HAVIGHURST	97
On the Establishment of Fundamental and Derived Units, with Special Reference to Electric Units. Part I	RAYMOND T. BIRGE	102
Applied Physics in the Search for Oil	L. L. NETTLETON	110
Physics Laboratory at the University of Cincinnati	L. M. ALEXANDER	123
College Entrance Examination Board—Proposed Revision of Entrance Examinations in Science Positions Wanted by A.A.P.T. Members		129
Apparatus, Demonstrations and Laboratory Methods:		
Simple Device for Focusing a Spectrometer Telescope for Parallel Light	ALFRED H. WEBER	130
Simple Method for Studying the Variation with Temperature of Young's Modulus for Certain Metals	J. E. CALTHROP AND J. T. MILLER	131
Double Purpose Brackets for a d'Arsonval Galvanometer	I. A. BALINKIN	132
Simple Laboratory Apparatus for Experiments in Dynamics	WALTER SOLLER	133
Radio Tube Demonstration	AUSTIN J. O'LEARY	134
New Thermal Conductivity Apparatus	A. L. FITCH	135
Discussion and Correspondence:		
Practical Method for Reducing Grades to a Common Standard	NIEL F. BEARDSLEY	137
Why Only Two Specific Heats of a Gas?	W. L. CHENEY	138
Dynamo and Motor Rules, Again	HENRY CREW	138
Two More Catch Questions	W. W. SLEATOR	138
Simple Demonstration of the Effect of a Shunt	ARTHUR TABER JONES	138
Brief Notices of Recent Publications		139
Digest of Periodical Literature		141
Announcements:		
Reprints of Survey Articles for Class Use		122
Concerning the Program for the St. Louis Meeting		128
Symposium on Instruction for Premedical Students		129

SEPTEMBER, 1935, SUPPLEMENT

The 1934-35 College Physics Testing Program		145
---	--	-----

DECEMBER, 1935

Count Rumford: Soldier, Statesman, Scientist	MARCY S. POWELL	161
Physics and the Arts	ROGERS D. RUSK	167
On the Establishment of Fundamental and Derived Units, with Special Reference to Electric Units. Part II	RAYMOND T. BIRGE	171
Models of Thermodynamic Surfaces	FRANK L. VERWIEBE	179
Professor K. K. Smith, 1887-1935	HENRY CREW	182
Apparatus, Demonstrations and Laboratory Methods:		
Improved Apparatus for the Determination of Joule's Equivalent by the Electrical Method	J. H. MCLEOD	183
Lantern Slide Color Mixer	JOHN J. HEILEMANN	184
Source for the Balmer Series of Hydrogen and Deuterium	G. P. HARNWELL	185
Charge-Discharge Key and Timer	WILLARD H. ELLER	188
Demonstration Apparatus for Illustrating the Flow of Electricity in Circuits	FRANK R. PRATT	189
Discussion and Correspondence:		
Is There a Centrifugal Force?	C. F. HAGENOW	190
What Educational Needs Have Favored the Development of Survey Courses in the Natural Sciences?	S. R. POWERS	191
Exercise of Student Originality in the General Physics Laboratory	M. H. TRYTTEN	192
Why Not the Poundal?	W. W. SLEATOR	193
Projection Electroscopes	WILFRID J. JACKSON	193
Available Graduate Appointments and Facilities for Advanced Study in Various Universities and Colleges—1936-1937		194
Teaching Aids		196
Recent Publications		196
Digest of Periodical Literature		197
Appointment Service: Positions Wanted by A. A. P. T. Members		199
Announcements:		
A. A. P. T. Book on Demonstration Experiments		181
Proposed A. A. P. T. Awards for Distinguished Teaching and Contributions to Teaching		189
Author Index to Volume 3		200
Analytic Subject Index to Volume 3		201

